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SOME NEW SPECIES OF RUSSULA

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(WITH PLATE 7 AND 1 TEXT-FIGURE)

Most of the following species have been under observation for several years, and with the possible exception of *R. simulans* and *R. ornaticeps* they seem to be rare. Even these species are limited in season and in habitat. The first collection of *R. Hibbardae* was made in 1916 by Miss Ann Hibbard who also collected the type of *R. viridi-oculata*. She has made numerous water-color sketches of the species described from Vermont and has placed these at the disposal of Miss Eaton for the preparation of the plate which accompanies this article.

On July 29, 1919, I found several specimens of *R. disparilis* Burl. growing on Newfane Hill, Vermont, under yellow and white birches and poplars. This had previously been reported only from the type locality, Stow, Mass. The taste at first was sweet and nutty, then tardily peppery. The stipe in some specimens had a pink wash near the apex and base on one side. The lamellae in mature specimens were pale maize-yellow.

Russula simulans sp. nov.

Pileus fleshy, broadly convex, becoming infundibuliform with age, up to 11 cm. broad; surface reseda-green to ivy-green, paler on the margin, vinous-purple in the center, or slate-violet and green streaked together, or the whole faded with some yellowish spots, viscid when wet, cuticle separable half way to the center, striate-reticulate under the lens and very slightly so to the naked eye, glabrous; margin even or scarcely striate-tuberculate for a depth of about one mm., inrolled nearly to maturity; context

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white, firm, soon slightly peppery, without special odor; lamellae white, heterophyllous, some forking part way to the margin or near the stipe, narrowed at each end, slightly decurrent, about 5 mm. wide at the center, close; stipe white, firm, spongy-stuffed, nearly equal, 5.5-7 cm. \times 2-2.2 cm., sometimes pruinose at the apex; spores pure-white, ellipsoid, minutely echinulate with blunt, short projections, 6.25-6.87 \times 8.75-9.37 μ .

TYPE LOCALITY: Newfane Hill, Vermont, 1,600 ft. elevation.

HABITAT: In woods usually under maple, birch, or oak trees, July and the early part of August.

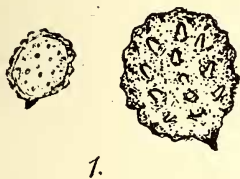
DISTRIBUTION: Newfane Hill, Vermont, and Magnetewan, Ontario, Canada.

This species resembles *R. variata*, *R. heterophylla*, and *R. bifida* in certain respects. It differs from *R. variata* in its heterophyllous lamellae which seldom fork more than once. *R. variata* has a few short lamellae irregularly placed and the lamellae fork from two to three times. From *R. bifida* it differs in its acrid taste, less forking and thinner lamellae, and in the vinous shades on the pileus. From *R. heterophylla* it differs in its acrid taste. This is probably widely distributed and because of its close resemblance in the color of the pileus to that of *R. variata*, or in its green form to *R. heterophylla* has been referred to one or the other of the species.

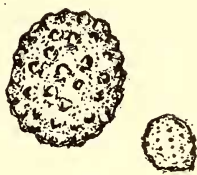
***Russula ornaticeps* sp. nov.**

Pileus convex-umbilicate, expanding when mature, with margin drooping, at length somewhat infundibuliform in old age, up to 10 cm. broad; surface variegated in color, Parma-violet, lilac-mauve and bluish-violet intermingled with grayish-violet, the lilac-mauve being usually in the center, surrounded by the indigo with bluish-violet on the margin, covered with a pruinose bloom, viscid when wet, the pellicle separable half way to the center; margin even, when young, somewhat striate-tuberculate when mature; context white, except next the cuticle, where it is tinged with the surface color, mild then slowly slightly acrid in and next the cuticle; lamellae fleshy-white, sometimes becoming rusty spotted near the edge, equal, some forking near the stipe, venose-connected, narrowed at the inner end, rounded at the outer, close; stipe white, occasionally washed with a faint tinge of violet, sometimes pruinose at the apex, irregularly striate, nearly equal

to abruptly narrowed at the base, $5-7 \times 1.5-2$ cm.; spores fleshy-white (t. 4), broadly ellipsoid, appearing minutely echinulate



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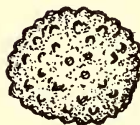
3.



4.



5.



6.

FIG. 1. *R. viridi-oculata*FIG. 2. *R. simulans*FIG. 3. *R. Hibbardae*FIG. 4. *R. ornatipes*FIG. 5. *R. praeumbonata*FIG. 6. *R. redolens*

under the $\frac{1}{6}$ objective and reticulate under the oil immersion, $6.25 \times 7.5 \mu$.

TYPE LOCALITY: Newfane Hill, Vermont, 1,600 ft. elevation.

HABITAT: In rather dry mixed woods in dead leaves, almost invariably under hop hornbeam trees, July, 1,300 to 1,600 ft. elevation.

DISTRIBUTION: Newfane, Vermont, and Magnetewan, Ontario, Canada.

This species has been found for four years from July 8 to August 4. It may occur earlier but I have rarely found it later. It is most abundant before the last week in July. It is very beau-

tiful when growing, but rather difficult to find on account of its color. The peppery taste seems to be confined to the cuticle or the context adjacent, and becomes perceptible after thorough chewing. In color this resembles *R. cyanoxantha* but differs in the slight peppery taste, the equal lamellae, and the absence of cystidia. From *R. heterophylla* it differs also in the color of the spores. The beauty is lost in drying.

***Russula viridi-oculata* sp. nov.**

Pileus fleshy, thin, soon plane, from 2.3–6 cm. broad; surface dark dull-green (264—t. 4) or darker blue-green in the center, shading to dull sage-green (278—t. 1) on the margin, fading with age to greenish-white (15—t. 1) toward the margin, viscid when moist, cuticle separable, slightly pruinose when young; margin even, recurved at first, extended when mature; context white; unchanging, peppery, slightly pungent, with the odor of green apples when fresh; lamellae white, equal, a few forking next the stipe, rounded and free, broad throughout, powdered somewhat with spores; stipe white, spongy, glabrous, equal, 5 cm. \times 1–1.2 cm.; spores white, broadly ellipsoid, uniguttulate, apiculate, minutely echinulate.

TYPE LOCALITY: Newfane Hill, Vermont, 1,500 ft. elevation.

HABITAT: Under a group of pines in mixed woods, July 28, 1919.

This may be distinguished from *R. aeruginosa* by the promptly acrid taste. It differs from *R. redolens* in taste as well as in odor and color and in the spore markings. It is smaller than *R. variata* and differs in the lamellae forking only near the stipe. It is also a small delicate mushroom more like *R. fragiliformis* in size and texture.

***Russula Hibbardae* sp. nov.**

Pileus fleshy, broadly convex, then plane to depressed, up to 10.5 cm. broad; surface vinous-purple to slate-violet on a background of Naples-yellow, unevenly colored, sometimes yellow with only a wash of slate-violet in places, pruinose-velvety, viscid when wet, but soon dry, cuticle separable nearly half way to the center; margin even or slightly striate-tuberculate on extreme edge; context white, unchanging, slowly becoming slightly peppery, without special odor; lamellae nearly white, then maize-

yellow (t. 1-2), a few reaching only half way to the stipe, forking near the stipe or a short distance away, interveined, rounded, and only slightly attached next stipe, rounded at outer end, close, broad; stipe white, unchanging, pruinose at apex, spreading a little next stipe, otherwise equal, firm, then spongy, 3-7 cm. \times 1.5-2.3; spores maize-yellow (t. 2-4), apiculate, symmetrical, echinulate, with spiny ridges forming reticulations, $6.2 \times 7.5-8 \mu$.

TYPE LOCALITY: Newfane Hill, Vermont.

HABITAT: In dead leaves under beeches, August.

DISTRIBUTION: Found in two different localities on Newfane Hill.

This species seems rare and very distinct. The peppery taste develops slowly and seems to be chiefly in the cuticle. I have found the species each summer since 1916 and although I have searched for it during July for three years I have not seen it until toward the end of the first week in August. As a rule the vinous color is more prominent toward the center of the pileus.

***Russula redolens* sp. nov.**

Pileus convex, then plane, depressed in the center, up to 4.5 cm. broad; surface dark drab-green to greenish-gray, sometimes paler toward the center, viscid when wet, appearing dull and pruinose when dry, cuticle separable; margin nearly even; context white, taste strong and disagreeable, becoming slightly peppery, odor when dried like strong celery, persisting; lamellae pure-white, equal, some forking near the stipe, midway to the margin, or near the margin, venose-connected, narrow at the inner end, broadest in the center, rounded at the outer end; stipe white, tapering toward the base, spongy, becoming hollow, glabrous, 2 cm. \times 1 cm. at apex, much narrower at the base; spores pure-white, very minutely echinulate, $5-7.5 \times 5.6-7.5 \mu$.

TYPE LOCALITY: Newfane Hill, Vermont, 1,600 ft. elevation.

HABITAT: Under maple, oak and spruce, or beech trees, August 3 and 11.

DISTRIBUTION: Newfane Hill and South Londonderry, Vermont.

This can be distinguished from all other green species of *Russula* by the strong celery-like taste and odor, which becomes noticeable in drying. The odor of the type collected in August, 1916, still persists in 1920.

Russula praeumbonata sp. nov.

Pileus fleshy, conical then expanding, with a large umbo, up to 5.5 cm. broad, surface scarlet-red to Nopal-red or ox-blood red on the umbo, glabrous, viscid when wet, with cuticle separable half way to the center; margin becoming widely striate-tuberculate; context white, unchanging, brittle, without special odor, mild in taste; lamellae white, equal, simple, finely serrulate, venose-connected, adnate; stipe white, tapering upwards, very brittle and fragile, stuffed, becoming hollow, up to 10 cm. long by 1 cm. thick; spores pure-white, broadly ellipsoid, very echinulate, apiculate, $6.2-8.75 \times 8.75-10 \mu$.

TYPE LOCALITY: Stow, Massachusetts, Simon Davis.

HABITAT: In a swamp under deciduous and coniferous trees, September.

DISTRIBUTION: Stow, Massachusetts, Newfane, Vermont, and Magnetewan, Ontario, Canada.

This is related to *R. purpurina* and *R. uncialis*, but differs from both in the presence of an umbo, in the more distant lamellae, the absence of red on the stipe, and the larger, more ellipsoid and more echinulate spores. From *R. purpurina* it differs further in that the lamellae remain nearly white even in drying, while in *R. purpurina* they become decidedly yellow. Three collections were made from the type locality in 1917 and one in 1918.

Late in August, 1919, I collected in Newfane, Vermont, two specimens of apparently the same species. The taste of these seemed to be at length slightly bitter as did the specimen found at Magnetewan.

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EXPLANATION OF PLATE 7

- Fig. 1, 5. *Russula simulans*.
Fig. 2. *Russula ornaticeps*.
Fig. 3. *Russula viridi-oculata*.
Fig. 4. *Russula Hibbardae*.
Fig. 6. *Russula redolens*.